Operation Iraqi Freedom

Value of PATRIOT Embedded Data Recorded in Tactical Hardware (U)

Presented by
George Williams

23 July 03

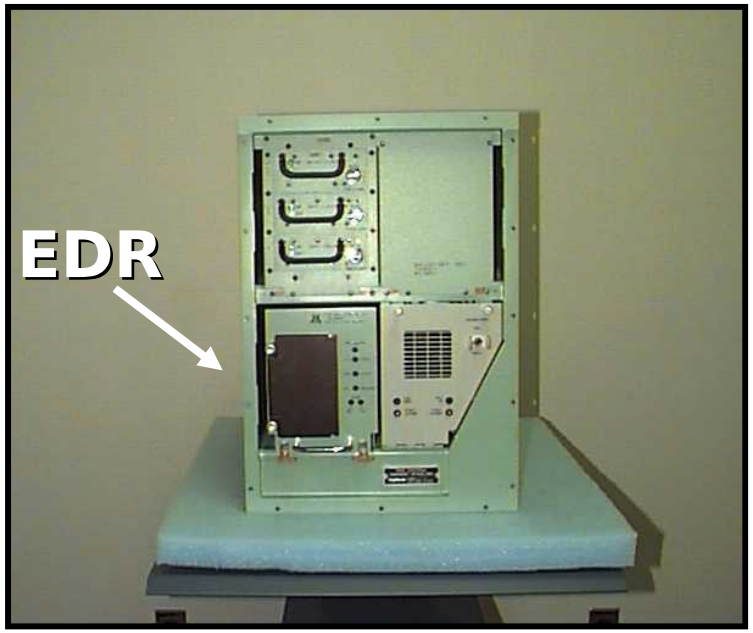
REQUIREMENT (U)

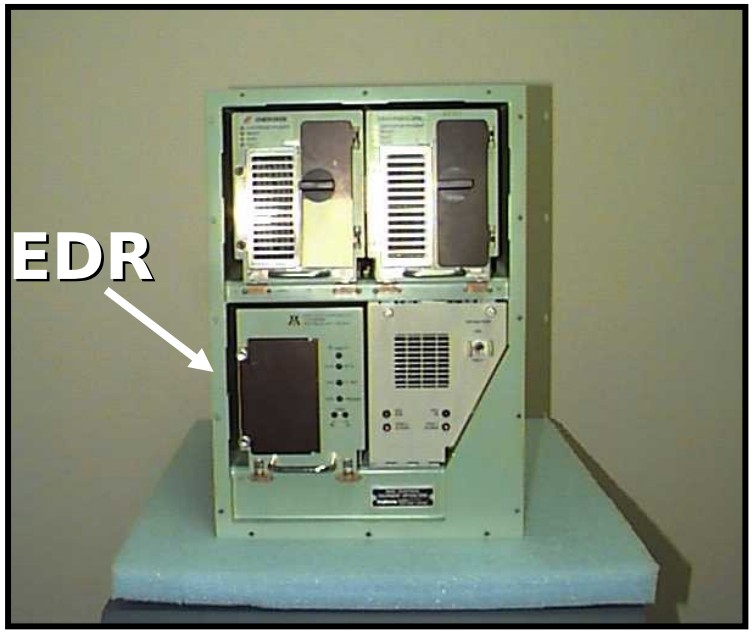
- 7 May 98 PAC-3 ORD
  - Transparent to user during operations
  - No System degradation
  - Real-Time recording of Key Events
  - 4 hour continuous operation
- 19 November 02
  - Anticipated upgrades
  - Through-put requirements
  - Expanded data set

Requirement based on Lessons Learned from Desert Sto

EMBEDDED DATA RECORDER (U)

The EDR provides Real-Time data recording and collection of Mission, Training, and Maintenance operations data for PAC-2 and PAC-3 configurations





EDR is located in the bottom left quadrant of the Electronics Rack Assembly

PATRIOT CONFIGURATION 3 SYSTEM (U)

BATTALION HEADQUARTERS

TACTICAL COMMAND SYSTEM (TCS)

INFORMATION AND COORDINATION CENTRAL (ICC)

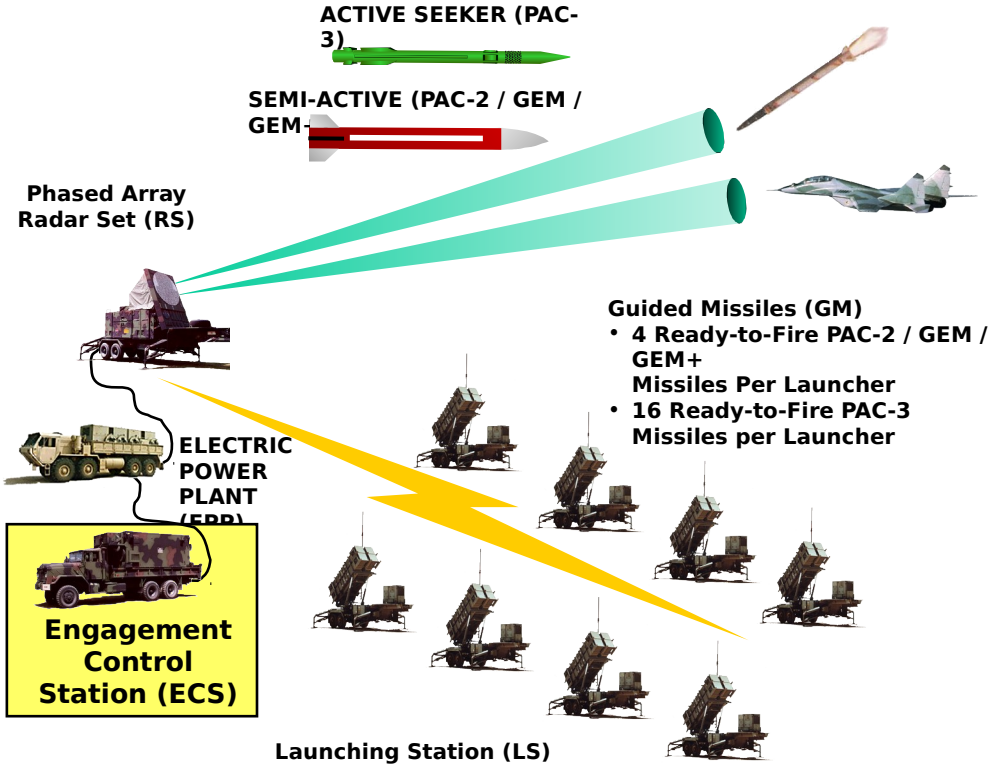
AUXILIARY EQUIPMENT

TQG-PU-804

Antenna Mast Group (AMG)

Communications Relay Group (CRG)

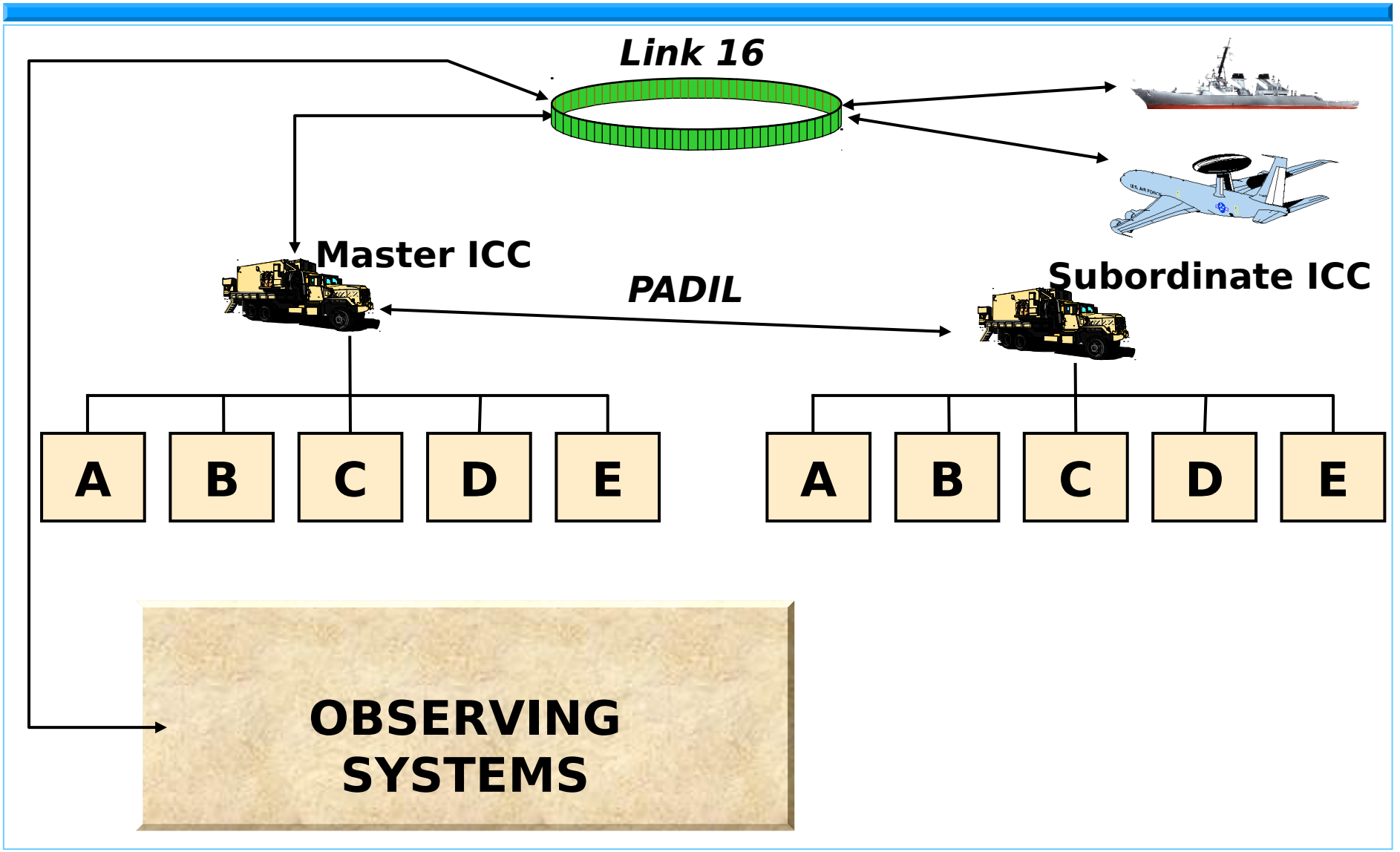
FIRING BATTERY (Typically 5 PER BATTALION)


ACTIVE SEEKER (PAC-3)
SEMI-ACTIVE (PAC-2 / GEM / GEM+)
Phased Array Radar Set (RS)
Guided Missiles (GM)
• 4 Ready-to-Fire PAC-2 / GEM / GEM+ Missiles Per Launcher
• 16 Ready-to-Fire PAC-3 Missiles per Launcher
ELECTRIC POWER PLANT (EPP)
Engagement Control Station (ECS)
Launching Station (LS)
• 4 Pre-PAC-3 Launchers
• 4 Dual-Capable PAC-3 Launchers

PAC-3 / CONFIGURATION 3 IMPROVEMENTS

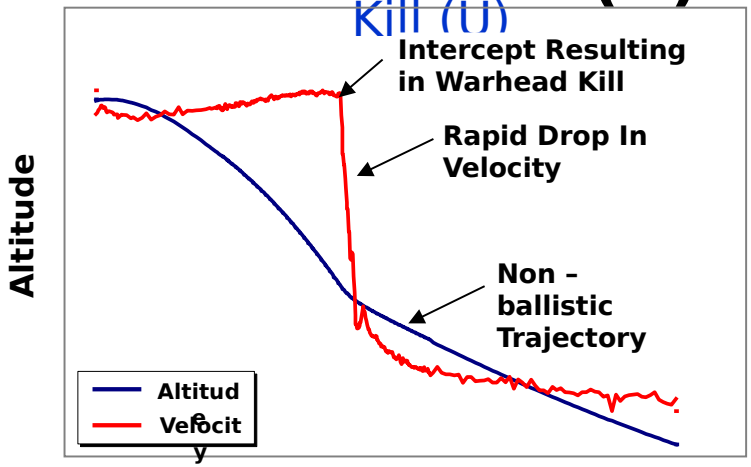
UNCLASSIFIED

VOLLEY DATA ARCHITECTURE (U)

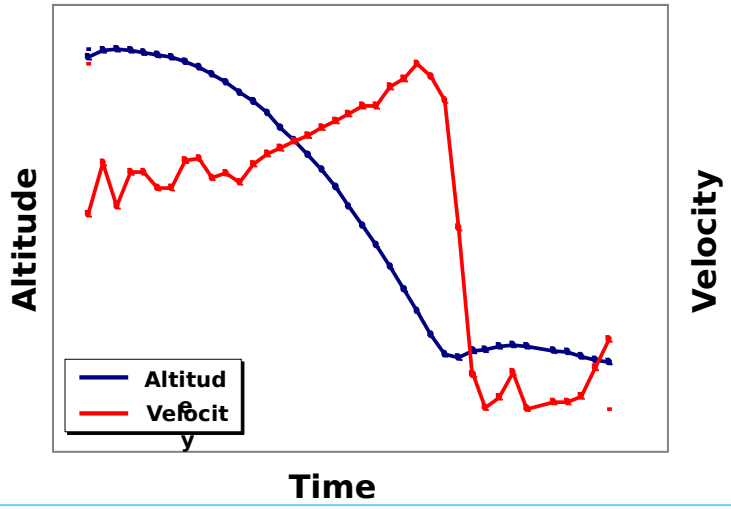


COMPARISON OF TEST RANGE INTERCEPT WITH OPERATION IRAQI FREEDOM (OIF) INTERCEPT (U)

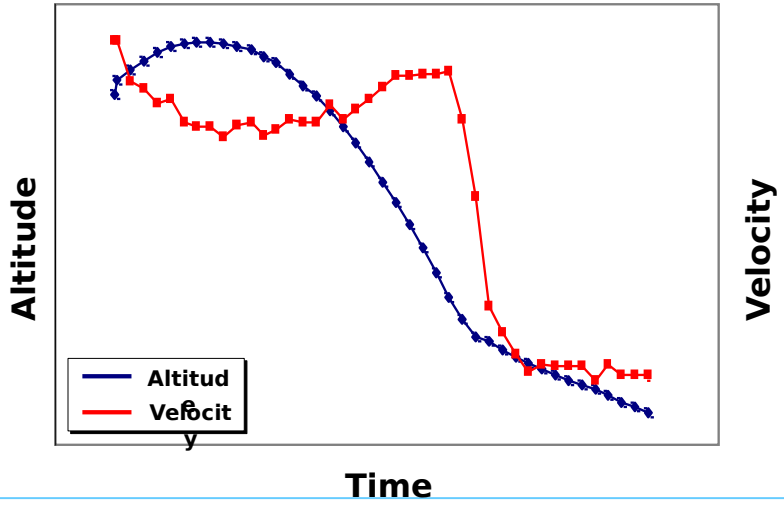
Test Range TBM Intercept Resulting in Warhead Kill (U)



OIF Attack A



OIF Attack B



DATA COLLECTION (U)

- **Hundreds of PATRIOT Embedded Data Recording (EDR) Tapes Were Collected During the Course of Operation Iraqi Freedom (OIF)**
  - Other Agencies and Services Collected Processed and Measurement-Level Data on the Iraqi TBMs Fired During the Course of OIF.
- **Quality of Database Ranges From Information Collected on Tactical Communications Links to Precision Sensor-Based Data on Most TBMs Launched.**

CURRENT EDR STATUS (U)

Good News

- When available the EDR data was essential to Warhead Kill and System Reliability Assessment
- Invaluable as a training device
- Data is available immediately for analysis
- Data to justify improvements
- Tool for detailed evaluation of Software

Bad News

- Availability is poor. Slightly higher than 50% for OIF
- Requires User action
- Unsupportable due to obsolescence
- Lengthy delays in transporting data to Analysis Centers

WAY AHEAD (U)

Long Term Planning

- Evaluate obsolescence issues with potential re-design initiatives with long-term acquisition of Solid-State device
- Command attention to re-enforce EDR use, maintenance and operation with follow-on training, maintenance advisories and criticality of EDR analysis
- Continuous monitoring and expeditious processing of unserviceable returns

o Establish a National Network for a Near Real-Time Retrie
tribution of Embedded Recorded Data for All Weapons Syst

SUMMARY (U)

- **PATRIOT Successfully Engaged and Intercepted All Nine TBMs That Were Predicted to Land in PATRIOT Defended Areas**
- **Data is Available to Assess That Eight of the Nine Intercepts Resulted in Warhead Kill. (Insufficient Data to Assess Warhead Kill or No-Kill for One Intercept)**
- **PATRIOT Successfully Defended Concentrations of Military Equipment and Personnel Such as: Camp Doha (CFLCC Headquarters), Camps NJ/NY/PA (101st AAD), TAA Thunder (101st AAD Helicopter Base), Camp Commando (1st Marine Expeditionary Force Engineering Group Headquarters), Camp Udairi (11th AHR and Combat Support Hospital), Al Jahra (C**
- **PATRIOT Successfully Defended Assets; No Troops Were Injured or Equipment Damaged by the TBMs Fired Against the Coalition Forces**
- **Damage Resulted!**